

REMARKS

In this response to the Final Office Action dated April 27, 2009, Applicants have amended Claims 10 and 11 and added new Claims 18-20. As discussed below, these amendments constitute no new matter. Claims 10, 11, 13, and 18-20 are currently pending. Although Claim 13 is indicated as withdrawn, the Examiner appears to have substantively reviewed this claim through indication that this claim stands rejected. Moreover, even if Claim 13 actually remains withdrawn, it will be eligible for rejoinder upon allowance of Claim 10. In view of the amendments and remarks herein, Applicants respectfully request reconsideration and issuance of the pending claims.

Discussion of the amendments

The amendment of Claim 10 finds support on page 27, lines 12 to 13; page 28, lines 12 to 13; and in Figs. 7 to 9 of the instant specification as filed. The amendment of Claim 11 finds support on page 28, lines 13 to 15, and page 30, lines 2 to 4 of the specification. New Claim 18 finds support on page 27, lines 12 to 16 of the specification. New Claim 19 finds support on page 27, lines 10 to 11 of the specification. New Claim 20 finds support on page 27, lines 11 to 12 of the specification.

As such, all the amendments in this response are fully supported and do not add any new matter. Applicants respectfully request entry of the amendments for the Examiner's consideration of patentability.

Anticipation

Claims 10, 11 and 13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Feldman *et al.* (U.S. Patent No. 6,299,757; "Feldman"). Applicants respectfully traverse these rejections.

Claim 10 now recites, among other things, a biosensor comprising: in its tip portion, an electrically insulating substrate and a cover sheet facing each other with a space in between and a spacer sheet somewhere therebetween; and a reaction part having an oxidoreductase in a holding space formed by the substrate, the cover sheet and the spacer sheet end; the liquid sample being delivered from the tip of the sensor into the holding space by capillary action, and an electrochemical change caused by an enzyme reaction between the liquid sample and the reaction part being detected using an electrode set having a working electrode and a counter electrode;

and the biosensor being provided with a projection at only one side in the widthwise direction of the spacer sheet end in the holding space with the projection extending toward the end of the biosensor; the spacer sheet being composed of one sheet; and the electrode being disposed on the substrate. Applicants respectfully submit that Feldman fails to teach at least some features of Claim 10.

Feldman's sensor in Figures 18B and 22B do not anticipate the claimed invention

In the Office Action, the Examiner contends that Feldman's sensor as disclosed in Figure 18B in the reference discloses what is claimed in Claim 10. Applicants respectfully disagree with this rejection. As noted above, the sensor (or the sensor sheet) of Claim 10 has a spacer composed of one sheet. In contrast, the sensor of Feldman (Figure 18B) consists of two spacers, i.e., a main spacer and another spacer separated from the main spacer. Further, the sensor of Claim 10 has a projection only on one side of the edge of one spacer. Based on this structural feature, the liquid sample can be smoothly introduced into the holding space of the liquid sample, and residual bubbles in the holding space are prevented in the claimed biosensor. In contrast, the sensor of Feldman (Figure 18B) comprises two spacers, and does not have a projection corresponding to the projection recited in Claim 10. Thus, the sensor of Feldman as disclosed in Figure 18B is clearly different from the sensor of the present invention in the absence of features.

The Examiner also contends that Feldman's sensor as disclosed in Figure 22B in the reference discloses the claimed biosensor of Claim 10. The sensor of Claim 10 of the present application has a projection only on one side in the widthwise direction of the spacer sheet end in the holding space with the projection extending toward the end of the biosensor so as to secure the capacity of the reaction part in the holding space and not leave bubbles in the holding space. This is easily understood from page 29, line 9 to page 30, line 13 and Figures 7 to 9 of the present specification. In contrast, as correctly cited in page 2, lines 11-13 of the Office Action, the sensor of Feldman shown in Figure 22B has two projections at an edge of the spacer sheet (regardless of whether the projections are disposed near the middle or at the edge of the spacer sheet), and has a reaction part disposed between the projections. The reaction part of such a sensor has a small capacity, and bubbles always remain. Accordingly, the sensor of Feldman (Figure 22B), which is clearly different in structure from the sensor of the present invention, thus cannot achieve the effect of the invention. Therefore, Claim 10 is novel over Feldman.

The features related to capillary action of Claim 10 is not taught by Feldman

The Examiner also contends that capillary action was not claimed in the claims of the subject application and therefore it is not understood how the difference in capillary action between Feldman and the instant application is relevant to patentability of the claims. *See* page 2, lines 17-18 and page 3, lines 1-2 of the Office Action. Applicants respectfully remind the Examiner that Claim 10 as filed recites "... the liquid sample being delivered from the tip of the sensor into the holding space by capillary action ...". Thus, Claim 10 clearly states that the liquid sample is introduced into the holding space by capillary action.

Applicants now explain capillarity with reference to Appendix attached hereto to more specifically illustrate the capillary action in the claimed invention. As shown in Appendix, when the tip of the sensor is brought into contact with a liquid sample, the liquid sample is introduced into a holding space S formed by an electrically insulating substrate 1, a cover sheet 6, and a spacer sheet end. As shown in the cross-sectional scheme of Appendix, capillarity is a phenomenon of upward suction of a liquid sample through a narrow space of the holding space S of a sensor, whereby the liquid sample flows into the reaction part. According to the present invention, since the sensor has a specific projection as explained above, the liquid sample can, as indicated by an arrow (→), flow smoothly, thus preventing residual bubbles. In other words, the sensor of the present invention has a projection disposed at a specific position, thus allowing a liquid sample to flow smoothly by capillary action and thereby preventing residual bubbles.

In contrast, Feldman nowhere suggests these features of capillary action and its resulting benefit according to Claim 10. As cited in the latest response filed January 21, 2009, Feldman merely discloses that the capillary action is performed by the smooth surface formed of the non-conductive material. However, as noted, Feldman's sensor does not have a specific projection as recited in Claim 10. Therefore, even if Feldman discloses capillary action, the capillary action disclosed in that reference has nothing to do with the feature of the present invention, i.e., providing the projection extending toward the end of the biosensor at only one side in the widthwise direction of the spacer sheet end. Accordingly, the resulting benefit of preventing residual bubbles cannot be achieved with Feldman's sensor. As such, Feldman further fails to anticipate the claimed invention.

Additional patentable features of Claim 10

As noted above, Feldman fails to teach several features of Claim 10. Moreover, Feldman neither teach nor suggest other additional features of Claim 10. For example, the sensor of Claim 10 has an electrode section (including a working electrode 21 and a counter electrode 22) disposed on the electrically insulating substrate. *See* the illustrative example as shown in Figure 8 of the instant application. In contrast, the sensor of Feldman (e.g. Figure 18B) has a spacer 504 interposed between a first substrate 500 and a second substrate 508, wherein a working electrode 502 is formed on the first substrate 500, and counter electrodes 510 and 512 are formed on the second substrate 508 (*See* column 31, lines 9 to 11, and lines 15 to 16). Accordingly, Feldman does not disclose the feature with respect to the arrangement of electrodes recited in Claim 10 of the present application.

In addition to the foregoing deficiency of Feldman, this reference also fails to teach another feature related to a reaction part of Claim 10. The sensor of Claim 10 has a reaction part in a holding space formed by an electrically insulating substrate 1, a cover sheet 6, and a spacer sheet end. *See* the illustrative example as shown in Figure 8 of the instant application. In contrast, Feldman simply describes that a redox mediator and/or an electron transfer agent (which might correspond to the "reaction part" recited in Claim 1 of the present application) "can be provided on either the first or second substrates 500, 508" (*See* column 31, lines 30 to 32 of Feldman). Feldman nowhere specifically describes where the reaction part of the sensor of Feldman is disposed. That is, according to the sensor of Feldman (e.g. Figure 18B), the reaction part can be disposed anywhere; furthermore, the holding space of the present invention is nowhere disclosed in Feldman. Accordingly, Feldman does not disclose the feature with respect to a reaction part of Claim 10 of the present application.

As is clear from the above, the sensor of Feldman fails to disclose several features recited in Claim 10 of the present application. Accordingly, the subject matter of Claim 10 is patentable over Feldman. Applicants respectfully request removal of the rejection under 35 U.S.C. § 102(b), and allowance of Claim 10.

As to Claims 11, and 13, they incorporate all the limitations of Claim 10 through their dependency. Therefore, these Claims are also in condition of allowance in light of Claim 10 being patentable over Feldman, in addition to their own features. Therefore, Applicants respectfully request reconsideration of Claims 11 and 13 for patentability.

Allowability of New Claims 18-20

As noted above, the new Claim 18-20 are fully supported with the specification as filed. These new claims are dependent from Claim 10 and thereby recite all the features of Claim 10. As Claim 10 is patentable over the cited reference, Claims 18-20 are also patentable for at least the same reasons that Claim 10 is allowable as well for their own features. Applicants respectfully request the Examiner to consider the claims for patentability.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

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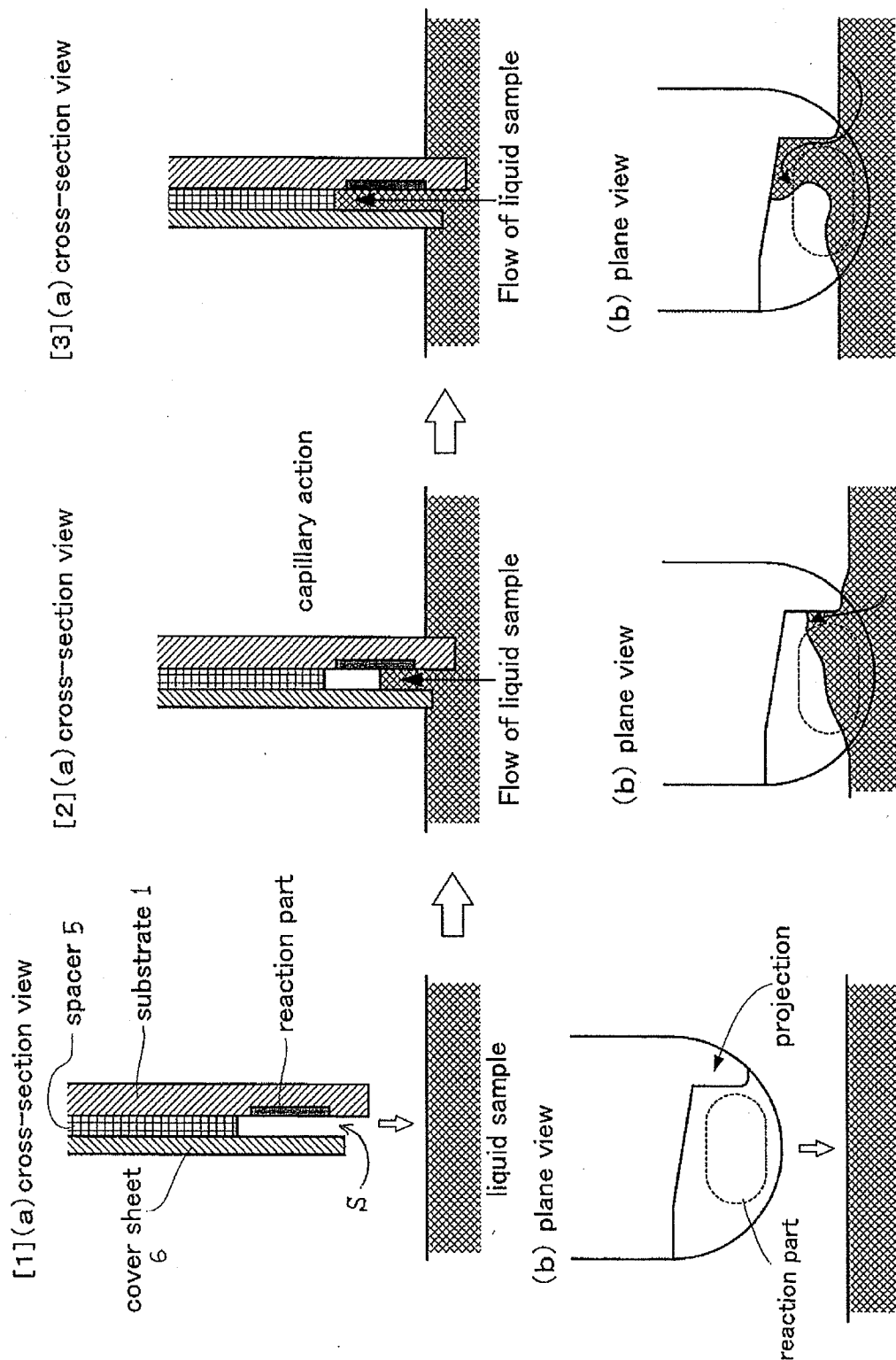
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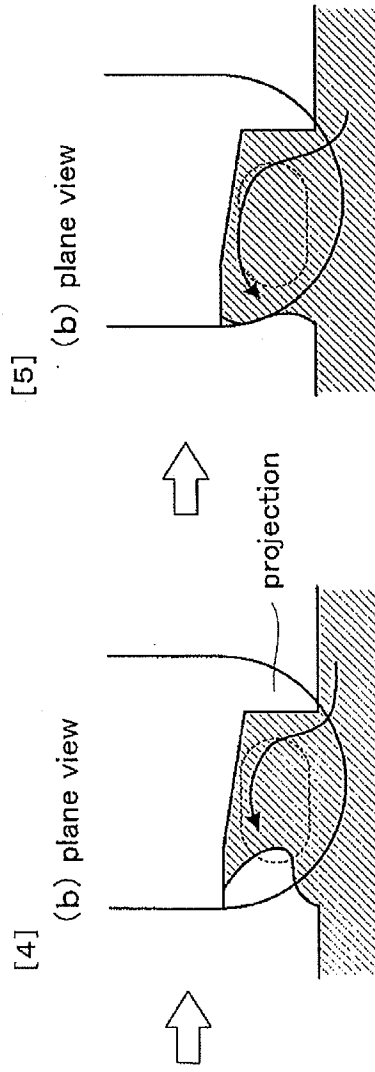
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Appendix





Flow of liquid sample

Flow of liquid sample